

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-27 are presently active in this case. The present Amendment amends Claim 22 to correct a minor typographical mistake and adds new Claims 23-27 without introducing any new matter.

Claims 1-18 and 21-22 were rejected under 35 U.S.C. §102(b) as anticipated by Takeda (U.S. Patent No. 6,300,849, herein "Takeda '849"). Claims 18-20 were rejected under 35 U.S.C. §102(b) as anticipated by Takeda (U.S. Patent No. 6,559,741, herein "Takeda '741").

In order to vary the scope of protection recited in the claims, new Claims 23-27 are added. New Claims 23-27 depend upon independent Claims 1, 7, 11, 15 and 18, respectively and recite a feature regarding the complex zero deviating from a real axis and an imaginary axis. This feature finds non-limiting support in the disclosure as originally filed, for example at page 11, lines 13-24 and at page 14, lines 1-15 with corresponding Figures 1-2. Therefore, the changes to the claims are not believed to raise a question of new matter.¹

In response to the rejection of Claims 1-17 under 35 U.S.C. §102(b) over Takeda '849, Applicants respectfully requests reconsideration of this rejection and traverses the rejection, as discussed next.

Briefly recapitulating, Applicants' invention, as recited in Claim 1, relates to a filter circuit including: a complex block which realizes a complex zero of a transfer function; a real/pure imaginary block which realizes a real zero of a transfer function and a pure imaginary zero of the transfer function; and a single path circuit which couples the complex

¹ See MPEP 2163.06 stating that "information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter."

block with the real/pure imaginary block through a single-path. Independent Claims 7, 11 and 15 recite similar features.

As explained in Applicants' specification at page 5, lines 4-9 with corresponding Figure 2, Applicants' invention improves upon background filter circuits because both real and complex zeros of a transfer function for grip delay compensation can be realized, the filter characteristics can be easily adjusted, and unwanted parasitic couplings can be suppressed.

Turning now to the applied reference, Takeda '849 discloses a distributed element filter with flat amplitude characteristics and a flat group delay characteristics, wherein a transfer function has at least one conjugate zero *on the real axis* and one conjugate zero *on the imaginary axis*.² The outstanding Office Action asserts that reference numeral 83a of Takeda '849's Figure 6 teaches the claimed complex block which realizes a complex zero of Applicants' independent Claims 1, 7, 11 and 15. Applicants respectfully disagree. Block 83a realizes only zeros on the real axis and zeros on the imaginary axis in the complex plane, as explained in Takeda '849 at column 12, lines 21-30. Accordingly, Takeda '849 does not have a block that realizes a complex zero.

Furthermore, Takeda '849's device cannot realize a complex zero that deviates from a real axis and an imaginary axis, as further specified in new dependent Claims 23-26. Takeda '849 specifically discloses that the numerator rational polynomial has "zeros *on the real axis* and zeros *on the imaginary axis*"³ (emphasis added). However, the complex block, as claimed in Applicants' invention, has zeros which deviate from the real and imaginary axis in the complex plane, as evident from Applicants' specification, for example in the disclosure of "a normalized low-pass filter in which the transfer function has a zero at $\pm (1 \pm 0.4j)$."⁴ In fact,

² See Takeda '849 in the Abstract.

³ See Takeda '849 at column 12, lines 22-28.

⁴ See Applicants' Specification at page 14, lines 4-6.

all Applicants' embodiments have complex zeros which deviate from the real and imaginary axis in the complex plane.⁵ Regarding dependent Claim 2, the outstanding Office Action asserts that reference numerals 85a and 86a in Takeda '849's Figure 6 corresponds to the first and second end resonators, respectively, as claimed in dependent Claim 2.⁶ However, reference numerals 85a and 86a are merely connection points of the resonators 18a and 21a.⁷ In Takeda '849's Figure 6 there are only two times four resonators, and therefore, Takeda '849 fails to teach or suggest the end resonators of Applicants' dependent Claim 2.

Accordingly, Takeda '849 fails to teach or suggest every feature recited in Applicants' independent and dependent claims, and it is therefore respectfully submitted that Claims 1-17 patentably define over Takeda '849. Furthermore, as explained above, new dependent Claims 23-26 recite features neither taught nor suggested by Takeda '849. Accordingly, Applicants respectfully traverse, and requests reconsideration of, the rejection based on Takeda '849.⁸

Applicants respectfully request reconsideration of the outstanding grounds for rejection of Claims 12-22 and traverse the rejections, as discussed next.

The applied references Takeda '849 and Takeda '741 both disclose band pass distributed element filters having real and imaginary transmission zeros. However, both references fail to teach or suggest the second circuit which realizes a flat group delay characteristic in the pass band, as claimed in independent Claim 18. The outstanding Office Action asserts that reference numeral 83a of Takeda '849's Figure 6 and reference numeral

⁵ See the embodiments of Applicants' invention in the specification at page 20, line 1, page 24, line 22, page 28, line 24, page 33, line 18, page 38, line 22, page 43, line 3, and page 46, line 20.

⁶ See the outstanding Office Action at page 3, lines 7-15.

⁷ See Takeda '849 at column 3, lines 31-35.

⁸ See MPEP 2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," (Citations omitted) (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

62 of Takeda '741's Figure 9 discloses such a feature.⁹ Applicants respectfully disagree. Circuit 83a of Takeda '849 includes four resonators 18a, 19a, 20a, and 21a¹⁰ and the circuit 62 of Takeda '741 includes also four resonators 55, 56, 57 and 58.¹¹ However, the second circuit of Applicants' invention includes *six resonators*, the first to fourth resonators as well as the first and second end resonators, as recited in independent Claim 18. In order to realize a complex zero, which is neither a pure real zero nor a pure imaginary zero, three couplings being in phase are required, as explained in Applicants' specification from page 11, line 9 to page 13, line 4. Takeda '849 and Takeda '741 only disclose four resonators that are coupled together in Figures 6 and 9, respectively. Therefore, the references Takeda '849 and Takeda '741 cannot realize a complex zero that deviates from a real axis and an imaginary axis, as further claimed in Applicants' dependent Claim 27.

Accordingly, the references of record fail to teach or suggest every feature recited in Applicants' claims, so that Claims 18-22 are believed to be patentably distinct over Takeda '849 and Takeda '741.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-27 is earnestly solicited.

⁹ See the outstanding Office Action at page 7, lines 2-3 and page 8, lines 8-9.

¹⁰ See Takeda '849 at column 14, lines 42-45 and in corresponding Figure 6.

¹¹ See Takeda '741 at column 12, lines 11-12 and in corresponding Figure 9.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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